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Applicants:	Young-Ki Kim et al.		
Title:	APPARATUS AND METHOD OF DRIVING LIQUID CRYSTAL DISPLAY HAVING DIGITAL GRAY DATA		
Application No.:	10/758,543	Filing Date:	January 16, 2004
Examiner:	William Boddie	Group Art Unit:	2629
Docket No.:	AB-1706 US	Confirmation No.	5598

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Application Number	10/758,543
Filing Date	01/16/2004
First Named Inventor	Young-Ki Kim et al.
Art Unit	2629
Examiner Name	William Boddie
Attorney Docket Number	AB-1706 US

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Remarks

Appellant's Reply Brief To Examiner's Answer

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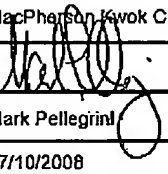
Signature			
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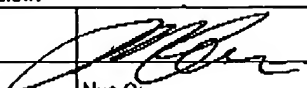
Signature			
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Application Ser. No.: 10/758,543	Attorney Docket No.: AB-1706 US
Filing Date: 01/16/2004	Examiner: William Boddie
Inventors: Young-Ki Kim, et al.	Art Unit: 2629
Title: Apparatus and Method for Driving Liquid Crystal Display Having Digital Gray Data	Ref. No. OPP20021428US

APPELLANT'S REPLY BRIEF TO EXAMINER'S ANSWER

This Reply Brief is submitted in response to the Examiner's Answer mailed May 22, 2008, and is intended to supplement Appellant's Appeal Brief filed on January 31, 2008 by addressing specific statements made by the Examiner in the Examiner's Answer.

Remarks

Regarding Appellant's independent Claim 1 and the cited art of Nitta et al. (U.S. Patent No. 6,801,178), the Examiner states:

"Nitta discloses, a digital/analog converter (11-15 in fig. 1; col. 4, lines 36-38) converting the digital gray data (5 in fig. 1) from the signal controller (1 in fig. 1) into analog voltages (VG0-VG255 in fig. 6) and supplying the analog voltages (16 in fig. 1) to the data driver as the gray voltages" (page 3 of Examiner's Answer),

"The basic argument put forth by Applicants can be boiled down to a belief that Nitta does not disclose "a digital/analog converter converting the digital gray data from the signal controller into analog voltages and supplying the analog voltages to the data driver as the gray voltages" (page 7 of the Examiner's Answer), and

"Digital data signals are supplied to the elements (DATA and CL1 in fig. 1), and based on these inputs a specific set of analog gray scale voltages are selected to be output. This would seem to the Examiner to satisfy the claim limitations the Applicants have presented regarding the digital/analog converter" (page 8 of the Examiner's Answer).

Appellants respectfully disagree.

As previously indicated by Appellants, the register control 11, register 13, and gray scale voltage generator 15 of Nitta functions as a voltage divider having "analog signals going in and analog signals going out" (emphasis added, page 7 of Appellants' Brief).

Appellants contend that the display data 5 that is an input to the register control 11 and the register 13 of Nitta is an analog signal not "digital display data" as indicated by the Examiner. In this regard, the word "digital" does not appear in the Nitta reference. Furthermore, the display data waveform identified as DATA in Figure 4 of Nitta is similar to the

gray scale voltage output also shown in Figure 4 and the bottom waveform shown in Figure 3 of Nitta that are identified as "a gray scale voltage signal group of 256 gray scale levels including **positive and negative signals** generated in the gray scale voltage generating circuit 15" (emphasis added, col. 4, lines 40-42), and "FIGS. 2 and 3 are diagrams showing **AC polarities** of the liquid crystal panel of dot inversion drive type" (emphasis added, col. 4, lines 60-61). As such, the display data of Nitta is an analog signal, not digital display data. Since there are no digital signal inputs to either the register control 11 or the register 13 of Nitta to be converted into analog signals, no digital/analog converter is present in Nitta.

Even if the display data signals were deemed to be digital signals, it is only the corresponding relationships between the display data and the gray scale voltage that is utilized by the register circuit, while the data driver circuit generates a gray scale voltage 16 from a reference voltage 17, 18 generated by a power circuit 8 based on the correspondence relationships between the display data and the gray scale voltage.

As indicated by Nitta, "According to yet another aspect of the invention, there is provided a liquid crystal display apparatus comprising a liquid crystal panel, a register circuit for holding the correspondence relationships between the display data and the gray scale voltage, a data driver circuit for generating a gray scale voltage from a reference voltage generated by a power circuit based on the correspondence relationships between the display data and the gray scale voltage and outputting the gray scale voltage to the liquid crystal panel, a scanning driver circuit for selecting a line to which the gray scale voltage is output, and a controller circuit for driving the data driver circuit and the scanning driver circuit based on a display control signal and the display data" (col. 1, lines 66-67 and col. 2, lines 1-9).

Appellants do not see this as evidence that the voltage generating circuit is a voltage divider as indicated on page 8 of the Examiner's Answer, rather Appellants see this as an indication that even though digital signals and analog signals may be present in a device does not necessarily mean that an analog/digital converter is also present in the device.

In other words, the Examiner's statement of, "In short, variable digital data is input and in return analog grayscale voltages specific to the digital data are output" is too generalized, not supported by Nitta, and does not indicate the presence of an analog/digital converter.

WHEREFORE, in light of the above and other good and sufficient reasons, the Applicant-Appellant respectfully requests that the Honorable Board reverse the decision of the Examiner with respect to the rejection of claims 1 and 3 – 13 and hold these claims allowable over the art of record.

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Respectfully submitted,

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